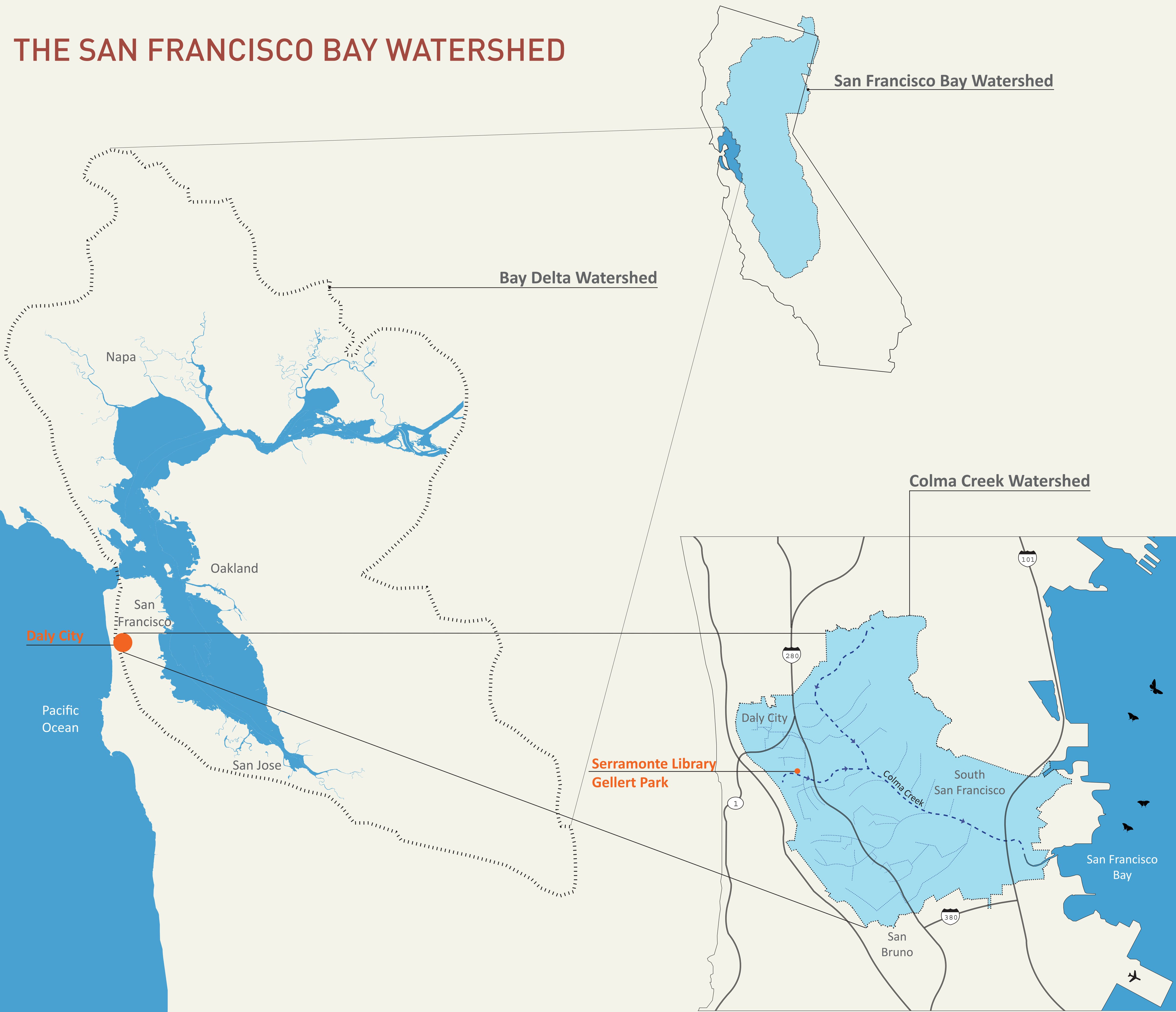


# THE SAN FRANCISCO BAY WATERSHED



## WHAT IS A WATERSHED?

A watershed is the area of land in which rain or snowmelt flows across or through on its way to a creek, river, lake, or ocean. All of the land on which this water flows on its way to the San Francisco Bay, is the San Francisco Bay Watershed. The combined Bay-Delta's watershed occupies about 55,000 square miles, nearly half of California's land area. The San Francisco Bay is also an estuary - a body of water where fresh river water and salty ocean water meet - a unique environment. The San Francisco Estuary is the largest estuary in western North America, covering roughly 1,600 square miles of central California and including 90 percent of California's remaining coastal wetlands. Here, fresh water collecting from the Bay-Delta watershed mixes with water from the Pacific Ocean, contributing to a diverse patchwork of habitats that includes tidal flats, marshes, lagoons, salt ponds, and vernal pools. These habitats provide a home for many fish species such as Chinkook salmon, striped bass, northern anchovy, and pacific herring. Water fowl migrating along the Pacific Flyway stop at the San Francisco Bay and over one million shorebirds inhabit Bay marshes annually.



Texto en Español disponible dentro de la biblioteca.

May paliwanag sa Tagalog na makukuha sa loob ng aklatan.

在這圖書館內有中文文字翻譯。

## WHY IS STORMWATER TREATMENT NEEDED?

One of the largest threats to the San Francisco Bay Watershed is pollution from the everyday actions of Bay Area residents. During rainstorms, oil, grease from cars, pesticides and fertilizers from gardens, and litter wash into storm drains, pipes and streams that lead to the Pacific Ocean and San Francisco Bay. These concentrated levels of pollutants entering the Bay severely degrade the water quality and habitat for wildlife. In the U.S., this type of pollution is the leading cause of poor water quality. The Serramonte Library Stormwater Treatment Garden is a bio-retention treatment area designed to clean stormwater from the parking area before it flows into Colma Creek and then to the San Francisco Bay. By creating small gardens such as these which clean water at the source of pollution - in this case the parking area contributes litter, oil and grease from cars - it is possible to improve water quality in the Bay and reduce the impact of urban development.

## COMMON POLLUTANTS



oil & grease



nitrates



zinc & copper  
zn,cu



phosphorus



debris & sediment

## HOW DO GARDENS CLEAN STORMWATER?

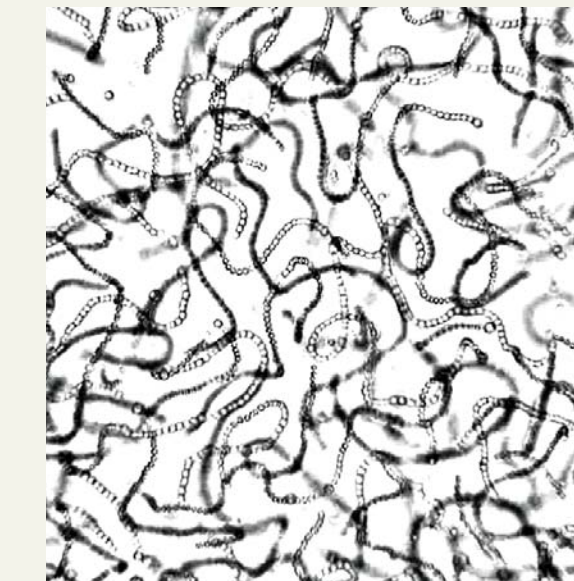
Taking stormwater to a holding place, like these basin shaped gardens, and then allowing it to slowly infiltrate through the soil, removes pollutants. Soil collects pollutant particles from water in the same way an air filter collects dust from the air. The microbes living in the soil break down the chemical compositions of the pollutants. The collected stormwater evaporates, is absorbed by the plants or is transpired back into the atmosphere. The plants used in the basin are native wetland species that are adapted to both flooding and drought.

The garden basins are designed to hold the stormwater within the basin, the soil and the plants to provide adequate time for these processes to occur and the pollutants to be removed.

## CLEANING PROCESSES



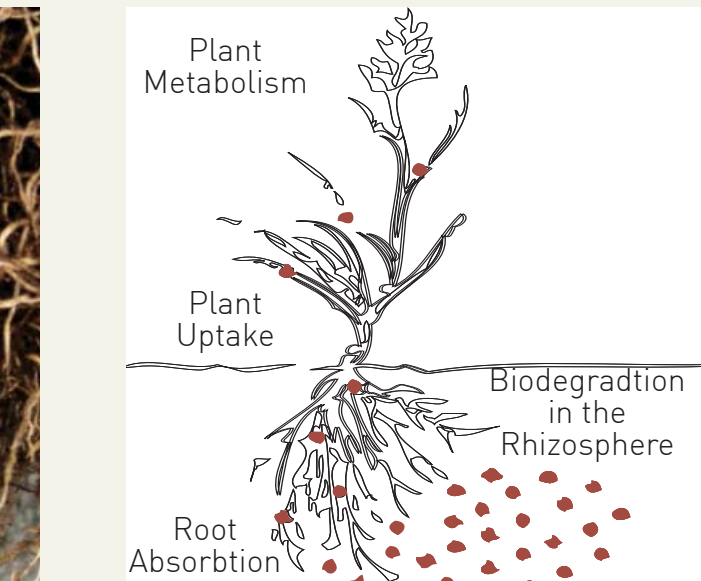
Evaporation



Microbial Action



Absorption



Plant Uptake

# SERRAMONTE LIBRARY – GELLERT PARK



Serramonte Library – Gellert Park Stormwater Treatment Gardens embody and convey the principles and practices of Sustainability.



California Tule  
*Scirpus californica*



California Gray Rush  
*Juncus patens*



Corkscrew Rush  
*Juncus effusus 'spiral'*



Douglas Iris  
*Iris douglasiana*



Daffodils  
*Narcissus*



Feather Reed Grass  
*Calamagrostis 'karl foerster'*



Giant Feather Grass  
*Stipa gigantea*



Wulfen's Spurge  
*Euphorbia characias 'wulfenii'*



Lion's Tail  
*Leonotis leonurus*



Sticky Monkeyflower  
*Mimulus aurantiacus*



Bush Lupine  
*Lupinus arboreus*



Yankee Point Ceanothus  
*Ceanothus griseus*

**MANY SUSTAINABLE PRACTICES CAN BE EASILY IMPLEMENTED IN YOUR OWN GARDEN**

CAPTURE RAINWATER FROM YOUR ROOF AND USE IT IN THE GARDEN to reduce runoff and recycle water for the removal of pollutants.

PROTECT THE BAY BY CONTROLLING SOURCE POLLUTION. Don't pour harmful pollutants down the stormdrain or allow spilled or leaked fluids to remain on the ground where rainwater can wash them into the stormdrain.

USE LOCAL, NATIVE PLANT COMMUNITIES AS MODELS to create spectacular landscapes that can help replace native habitats that have been lost, and encourage biodiversity.

CHOOSE PLANTS THAT CAN GROW TO THEIR NATURAL SIZE IN THE SPACE ALLOTTED TO THEM to avoid unnecessary shearing, pruning, or plant removal.

DO NOT PLANT INVASIVE SPECIES to protect native wildlands and avoid generating plant debris.

PLANT AND PROTECT TREES TO MODERATE BUILDING TEMPERATURES by shading, cooling the air through evapotranspiration, and reducing the velocity of wind.

GRASSCYCLE / MULCH MOW to return nutrients and moisture to the turf and to avoid landfilling.

COMPOST PLANT DEBRIS ON-SITE and feed the soil by topdressing planting beds and turf.

AMEND SOIL WITH COMPOST BEFORE PLANTING AND AERATE COMPACTED SOILS to foster a fertile and disease suppressive soil with improved structure, aeration, and water holding capacity, and with a diminished need for fertilizer, pesticides, and irrigation.

INSTALL HIGH EFFICIENCY IRRIGATION SYSTEMS that use an automatic, self-adjusting controller responsive to site weather conditions, and that have a dedicated irrigation meter to monitor landscape water use.

MANAGE AND MAINTAIN THE IRRIGATION SYSTEM CAREFULLY to conserve water and reduce runoff.